Title: A Day at the Amusement Park

Brief Overview:

This unit will have students going to an amusement park. At the park, they will make decisions concerning admission price, elapsed time, and ride selection. These activities integrate patterns and their connection to real-life situations. Students also will be asked to examine and extend various patterns.

Link to Standards:

- **Problem Solving** Students will demonstrate their ability to solve mathematical problems through the use of problem solving approaches to investigate and understand mathematical content; formulate problems from everyday and mathematical situations; develop and apply strategies to solve a wide variety of problems; and verify and interpret results with respect to the original problem.
- **Communication** Students will relate pictures and diagrams to mathematical ideas; reflect on and clarify their thinking about mathematical ideas and situations; relater their everyday language to mathematical language and symbols; and realize that discussing, reading, writing, and listening to mathematics are a vital part of learning and using mathematics.
- **Reasoning** Students will use models, known facts, properties, and relationships to explain their thinking; justify their answers and solution processes; and use patterns and relationships to analyze mathematical situations.
- **Connections** Students will link conceptual and procedural knowledge; recognize relationships among different topics in mathematics; and use mathematics in their daily lives.
- **Number Relationships** Students will demonstrate their ability to describe and apply number relationships in a variety of ways; knowledge of the effect of operations; and interpret and use numbers in real-world counting and measurement situations.
- **Patterns and Functions** Students will create and explain a pattern; and recognize, describe, and extend various patterns in order to identify the rule.
- **Statistics** Students will demonstrate their ability to collect, organize, and display data and interpret information obtained from displays.
- **Measurement** Students will apply concepts of elapsed time to verify information; and apply measurement to interdisciplinary and real-world problems.

Grade/Level:

Grades 3/4

Duration/Length:

This unit will take 3-5 periods (1 hour each).

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Patterns
- Concepts of time
- Addition with regrouping
- Problem solving strategies
- Money

Objectives:

Students will be able to:

- work cooperatively in groups.
- organize data from within the text.
- evaluate a situation and give appropriate support for their answer.
- copy, continue, describe, and build upon patterns.
- see patterns and organize information.

Materials/Resources/Printed Materials:

- Teacher Resource Sheets 1-6
- Student Resource Sheets 1-10
- Highlighter pens (1 per student)
- Color pencils/crayons (one red, blue, and green per person)
- Manipulatives (color tiles, pattern blocks, unifix cubes, etc.)
- Calculators

Development/Procedures:

Task 1: The students will read and discuss the prompt.

- Read the prompt. (See Teacher Resource Sheet 1.)
- Utilize an appropriate graphic organizer, having the whole class brainstorm ideas related to visiting an amusement park. (See Teacher Resource Sheets 4 and 5 and give students graphic organizer if necessary.)
- Define terms as necessary (such as amusement park, admission, flume,...).
- Direct student responses toward: length of lines, cost of admission, types of games/prizes.
- Read the question which follows and, using the overhead, highlight the key words (based on class discussion).
- Have students highlight their copy of the questions using the overhead model.
- Have manipulatives available at a central location.

Task 2: The students will determine the total admission cost for the group.

- Place students in cooperative groups of 4 to 5.
- Direct students to determine the cheapest option for entering the park.

- Identify which problem solving strategy their group used.
- Discuss group responses.

Task 3: The students will use problem solving skills to decide how to efficiently use their time.

- Inform students of expected outcomes (based on teacher expectations).
- Define key vocabulary (justify, explain, and show your work).
- Discuss with students the expectations for group work and individual work.
- Assign students to complete Task 3 on the Student Resource Sheet.
- Identify which problem solving strategy each group used.
- Discuss group responses.

Task 4: The students will use problem solving skills to decide how to get in line so that they are assured a ride in a particular boat.

- Inform students of expected outcomes. (See Teacher Resource Sheet 6.)
- Direct students to complete Tasks 4 - 6.

Task 5: The students will determine the fewest number of cans that will pass by in order for them to win a prize.

Task 6: The students will calculate elapsed time.

Performance Assessment:

One rubric has been included for Task 4. You may choose to make others for each task. Have the children develop them or simply score them by another means.

Extension/Follow Up:

1. Students can go on a field trip to an amusement park.
2. Students may design an amusement ride and have other students determine the pattern.
3. Write a letter to a friend describing the amusement park experience.

Authors:

Leila Campbell
Piney Branch Elementary
Montgomery County, MD

Christine Overstreet
North Bend Elementary
Baltimore City, MD

Matt Cuthbert
Twin Ridge Elementary
Frederick County, MD

PROMPT

You and your friends have been saving money all summer to go to Wally's Wacky Water World. Everyone has finally saved enough money to go. Your parents have agreed to drop you off at 8:00 am and to pick you up at 5:00 pm.

TASK 1 (Student Page 1)

How much time will you and your friends be able to spend at the park today?

TASK 2 (Student Page 2)

You arrive at Wally's Wacky Water World at 8:00 am with your 4 friends. You check out the prices to get in. You see the following sign, but part of it has been washed off by the rain.

(Student Page 3) Looking at the sign you see that there are a number of choices for admission. What is the cheapest way your group could enter the park? You need to convince your friends that this is the best choice.

(Student Page 4) As you are about to go into the park, four more of your friends show up. How many people are in your group now?

Figure out how much it will cost for your new group to enter the park.

TASK 3 (Student Page 5) Teacher Resource Sheet 2

You have 1 hour before you need to meet your friends for lunch. You would like to get on one more ride.

The Slippy Slide takes five people every 8 minutes. If you choose to ride the Slippy Slide, you will be the 42nd person in line.

Do you have enough time before lunch to ride the Slippy Slide? Show your work and justify your answer.

(Student Page 6) The Round About takes twenty-four people every 15 minutes. If you choose to ride the Round About, you will be the 58th person in line.

Do you have enough time before lunch to ride the Round About? Show your work and justify your answer.

TASK 4 (Student Page 7)

After lunch, you and your 8 friends find the most spectacular Flume ride on the East coast. There are only three colors of boats. You notice that the red boats go faster and get wetter than any others. The red boat comes before the blue but after the green. Each boat must have 3 people. There are already 12 people in line ahead of your group. The green boat is next in line. Everyone in your group wants to ride in a red boat.

What color boat will the first three people in **your** group get on? How do you know?

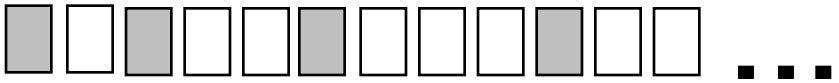
(Student Page 8) If the other 6 people in your group also want to ride in a red boat, what will they have to do? Why?

ON YOUR OWN (Student Page 9)

What color boat will the 35th person ride? Justify your answer.

TASK 5 (Student Page 10)

After much discussion, you and your friends decide that you don't want to go home empty-handed. You wander over to the Strike a Sprite game because you really want to win a three foot stuffed animal. In order to win, you must knock down 6 Sprite cans from a line of moving cans. As you watch other people playing the game, you observe the following . . .



represents Coke cans

represents Sprite cans

ON YOUR OWN

What is the least number of cans that will pass by before you can win the gigantic prize? Explain your answer.

TASK 6 (Student Page 11)

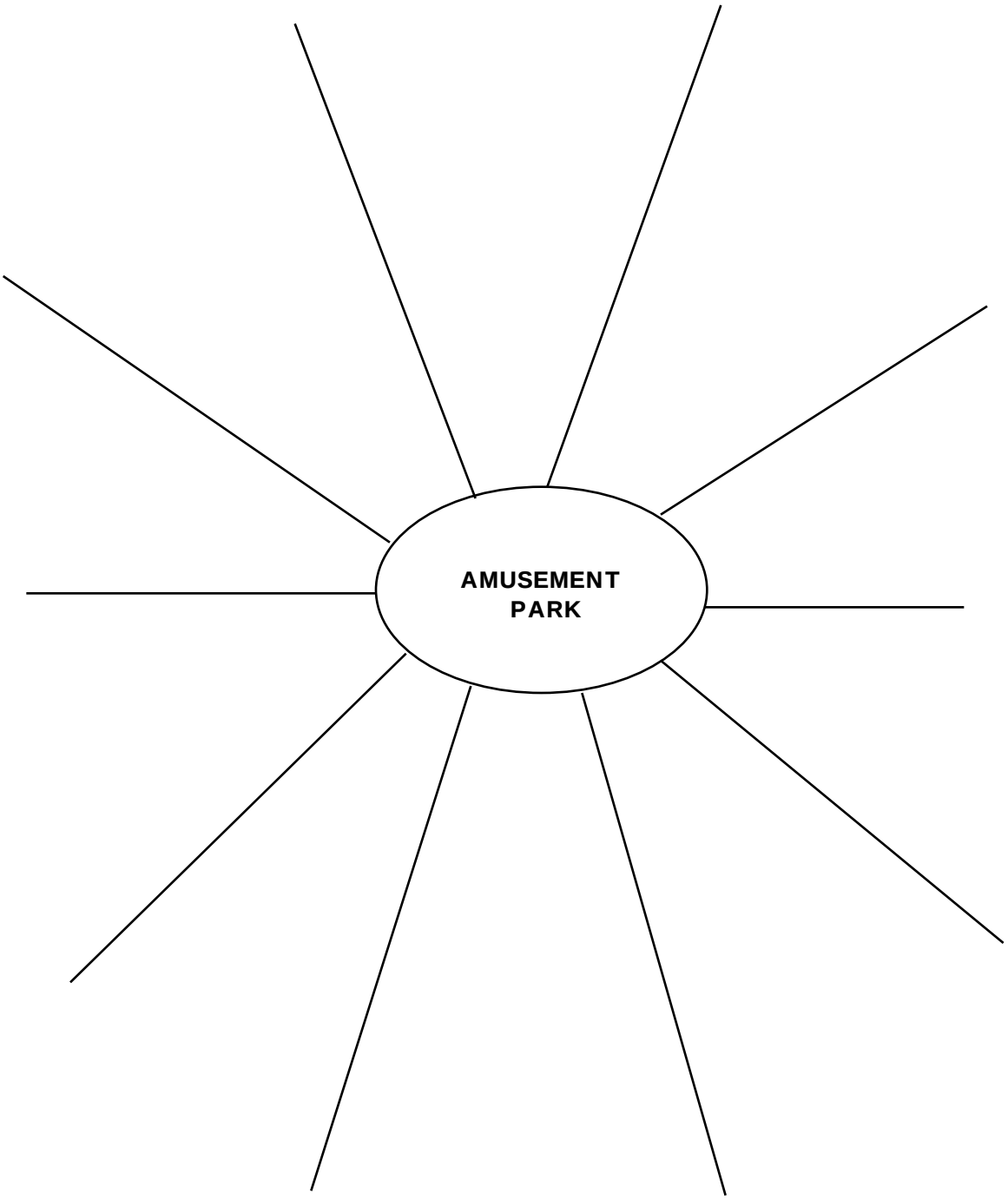
You look at your watch and notice that it is 3:45 pm, how much time do you have before your parents pick you up?

KWL

What I Know	What I Want to Know	What I Learned

Teacher Resource Sheet 5

Amusement Park Web



TASK 4 SCORING RUBRIC

SCORE	CRITERIA
4	Used a variety of problem solving strategies. Used math vocabulary. Made or drew a picture if appropriate. The writing justifies the response.
3	Used a variety of problem solving strategies. Used math vocabulary. Made or drew a picture if appropriate.
2	Made or drew a picture if appropriate. Used at least one problem solving strategy.
1	Made or drew a picture.

TASK 1

PROMPT

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How much time will you and your friends be able to spend at the park today?

_____

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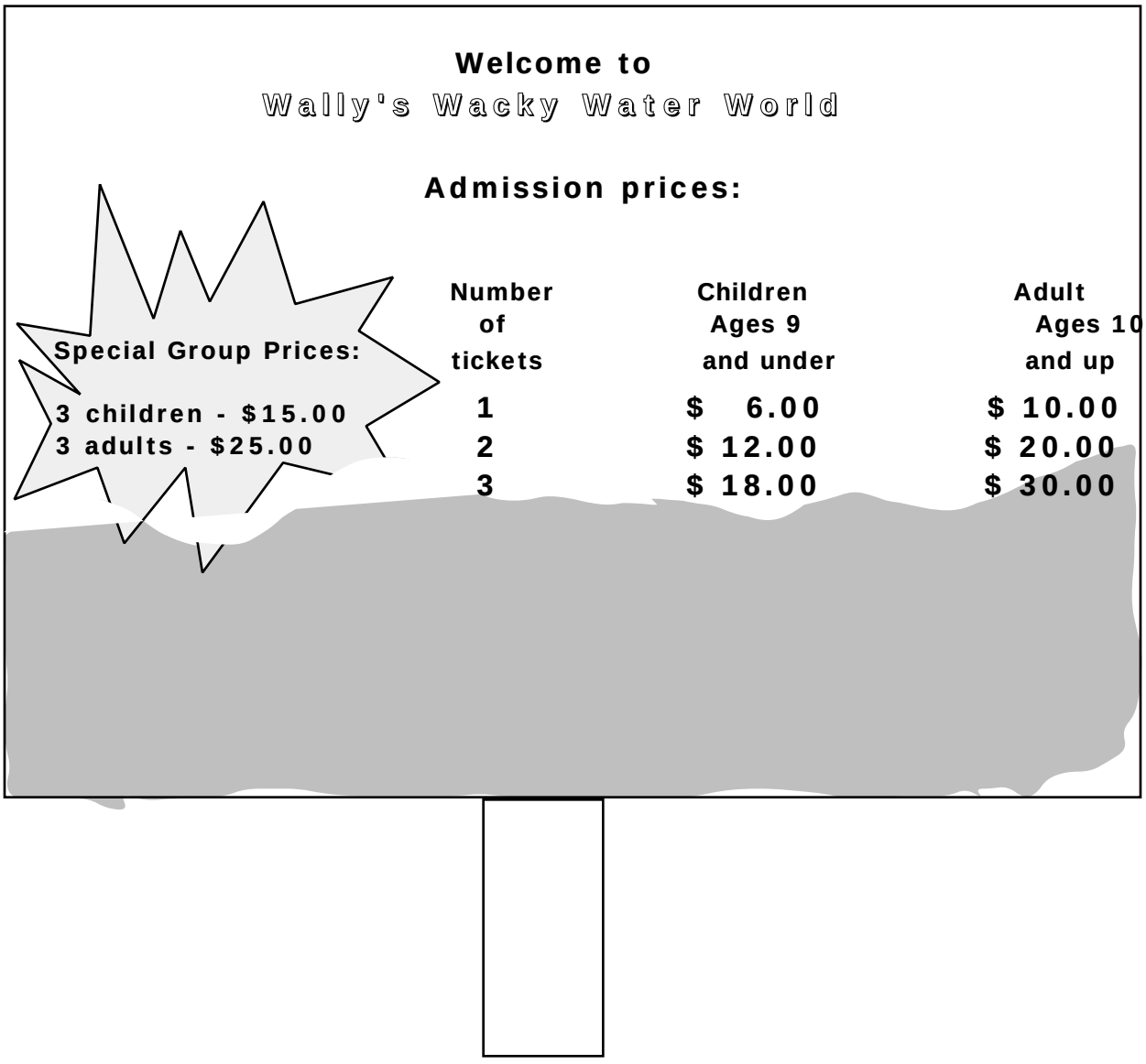

Looking at the sign you see that there are a number of choices for admission. Determine the cheapest way your group could enter the park. You need to convince your friends that this is the best choice. Show your work.

As you are about to go into the park, four more of your friends show up. How many people are in your group now?

Fortunately, your group didn't buy tickets yet. Figure out the cheapest way for your new group to enter the park.

You have 1 hour before you need to meet your friends for lunch. You would like to get on one more ride.

The Slippy Slide takes five people every 8 minutes. If you choose to ride the Slippy Slide, you will be the 42nd person in line.

Do you have enough time before lunch to ride the Slippy Slide? Show your work and justify your answer.

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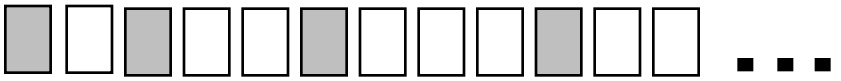

represents Coke cans

represents Sprite cans

ON YOUR OWN

What is the least number of cans that will pass by before you can win the gigantic prize? Explain the pattern you found.

_____

_____

_____

_____

_____

_____

Task 6

You look at your watch and notice that it is 3:45 pm, how much time do you have before your parents pick you up?

_____

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_____